

6.—SUBFOSSIL MOLLUSCS, BETWEEN ESPERANCE AND ISRAELITE BAY.

BY

BERNARD. C. COTTON,
Conchologist, The South Australian Museum.

Communicated by Professor R. T. Prider ; 12th December, 1950.

Professor E. de C. Clarke has forwarded to me some interesting sub-fossils collected by him in company with Mr. Tarlton Phillipps during a trip along the south coast of Western Australia, between Esperance and Israelite Bay.* The shells are from salt pans and stranded beaches on the coastal plain now a few feet above sea-level.

SALT WATER LAKES.

On the "Esperance-Israelite Bay track about 33 miles east of old Thomas R. homestead on the bed of a small creek running into a salt lake" occur numerous living specimens of *Coxiella striatula* Menke, a species originally described from Rottnest Island. The genus *Coxiella* is well known as a dominant inhabitant of salt lakes in South Australia and Victoria. *C. striatula* occurs also in hard travertinised sand in the "Esperance-Israelite Bay track about three miles back towards Esperance before reaching Port Malcolm, on a clay pan forming low cliffs three feet in height on the side of the lake." Another species of *Coxiella* similar to the South Australian *C. confusa* Smith, is also in great quantities in a "Recent swamp deposit, Duke of Orleans Bay, at the crossing of Duke Creek" and some specimens are embedded in partly travertinised sand. This species is found abundantly in the Coorong of South Australia alive and sometimes in travertinised sand in the same area.

FINE SAND BEACH.

This name is used to describe the type of beach which is found in protected waters and semi-estuarine conditions, where the sand is fine and not coarse as it is frequently found on open ocean beaches. The littoral fauna is very consistent right along the southern Australian coast, the species showing sub-specific rather than specific differences at the extreme east and west. Subfossil living species are represented at the different sites. Large specimens of the sand cockle, *Katelysia scalarina* were found beside the "Esperance-Israelite Bay track between Port Malcolm and Israelite Bay about four miles from Ponton's old homestead—on side of salt lake." They are abundant and form shell banks apparently similar to those of the South-East of South Australia, mentioned by Crocker and Cotton 1946, Trans. Roy. Soc. S. Aust., 70, (2), p. 67, fig 3. The following species were also found in this locality:—Marine Pelecypoda: *Anadara trapezia*, *Ostrea sinuata* and large specimens of *Cardium racketti*. Marine Gastropoda: *Niotha pyrrhus*, large *Parcanassa pauperata* which prey on *Katelysia scalarina*, *Uber conicum* the Sand Snail, and *Akera bicincta*, also *Cominella eburnea* and *C. lineolata* both of which live on pebble reefs sometimes found in otherwise sandy areas.

* I wish to apologise to Mr. Cotton, who sent me these notes in March, 1948, for my delay in submitting them to the Royal Society of Western Australia.

CONCLUSION.

The salt-lake shells *Coxiella striatula* and *Coxiella* cf. *confusa* occur in great quantities alive and as subfossils in the travertinised sand-banks. This formation is comparatively recent and subsequent to the Mid-Recent Epoch.

The stranded beaches have a fine-sand to estuarine suite of shells remarkable in that they are frequently comparatively large, suggesting that conditions, ecological, climatic and geographic, were more congenial than those under which the same species live today. This stranded beach deposit is almost certainly contemporary with the well known 15 ft. to 20 ft. eustatic beach developed around the coast of Southern Australia. It has recently been found behind the Woakwine Range of south-east South Australia where R. C. Sprigg and myself discovered the first authentic specimens of *Anadara trapezia* in this area. Although the Woakwine Range may have been originally formed during the Late Pleistocene about 100,000 years ago, the deposit here being considered is of a more recent age, and formed when a shallow arm of the sea flowed behind the Woakwine and gave the warm shallow water *Zostera* flat conditions to support *Anadara trapezia*. During the Mid-Recent 15 ft. to 20 ft. emergence estimated to have occurred about 4,000 years ago, the onset of lower temperatures quickly wiped out the exposed surface dwelling *Anadara trapezia* while the accompanying wetter and cooler conditions were favourable to the growth of larger fine-sand and estuarine species such as those listed above.
